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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* CAROLUS MATTHIAS ANNA MARIA MESTERS and  
RONALD JAN SCHOONEBEEK

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Appeal 2009-003569  
Application 10/738,332  
Technology Center 1700

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Decided: August 31, 2009

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Before CATHERINE Q. TIMM, KAREN M. HASTINGS, and  
JEFFREY T. SMITH, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1, 2, 9, 11-21, 24-26, 30, and 33-34. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

## I. STATEMENT OF THE CASE

The invention relates to a process for the catalytic selective oxidation of sulfur compounds in a hydrocarbonaceous feedstock (Spec. 2). Claim 1 is illustrative of the subject matter on appeal:

1. A process for the catalytic selective oxidation of a sulfur compound contained in a hydrocarbonaceous feedstock to sulfur dioxide, wherein the process comprises: contacting a gaseous feed mixture of the hydrocarbonaceous feedstock, of which the sulfur compound is selected from the group consisting of hydrogen sulfide, mercaptans, disulfides, and heterocyclic sulfur compounds, and a molecular-oxygen containing gas with a catalyst at a temperature of at most 500 °C, wherein said catalyst comprises a catalytically active group VIII noble metal selected from the group consisting of platinum, rhodium, iridium and combinations of two or more thereof at a concentration in the range of from 0.02 to 10% by weight, based on the total weight of the catalyst, supported on a catalyst carrier comprising stabilized or partially stabilized zirconia, wherein said feed mixture has an oxygen-to-carbon ratio of below 0.15.

Appellants request review of the sole rejection maintained by the Examiner, namely, the rejection of claims 1, 2, 9, 11-21, 24-26, 30,<sup>1</sup> and 33-34 under 35 U.S.C. § 103(a) over Frame (US 3,978,137, issued Aug. 31, 1976) in view of Yoo (US 3,945,914, issued Mar. 23, 1976) and Mahadev (WO 92/20621, published Nov. 26, 1992).

Since no claims are argued separately from the others, we decide this Appeal on the basis of representative independent claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii) (“When multiple claims subject to the same ground of rejection are argued as a group by appellant, the Board may select a single

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<sup>1</sup> The Examiner includes claims 27-29 in the stated rejection in both the Final Office Action and in the Answer. However, this error is harmless since it is apparent that both the Examiner and the Appellants acknowledge that claims 27-29 are no longer pending in this application (Br. 2-3; Final Office Action 2; Ans. 2).

claim from the group of claims that are argued together to decide the appeal with respect to the group of claims as to the ground of rejection on the basis of the selected claim alone.”).

## II. *The claimed catalyst*

### A. ISSUE ON APPEAL

Appellants and the Examiner do not dispute that Frame teaches a catalyst comprising a Group VIIB metal phthalocyanine and a Group VIII metal phthalocyanine (*see* Br. and Ans.). Nonetheless, the Examiner contends that a broad interpretation of the claim language encompasses the catalyst taught by Frame (Ans. 6). Appellants, however, contend that the Frame catalyst is distinguishable from the claimed catalyst, which “comprises a catalytically active group VIII noble metal selected from the group consisting of platinum, rhodium, iridium and combinations of two or more thereof” (Br. 4-5, Reply Br. 2).

A first issue on appeal arising from the contentions of Appellants and the Examiner is: have Appellants shown that the Examiner reversibly erred in interpreting the claimed catalyst to encompass the catalyst taught by Frame?

### B. FACTUAL FINDINGS

The following Findings of Fact (FF) are relevant to deciding the above identified issue on appeal:

1. Appellants’ Specification states that the catalyst may include performance-enhancing inorganic metal cations present in intimate association supported on or with the catalytically active metal (Spec. 5, ll. 14-19).

2. Appellants' Specification does not require that the group VIII noble metal be provided in a pure form (*see generally* Spec.).

3. Appellants' Specification teaches that the group VIII metal ions are impregnated onto the support with a solution containing one or more of rhodium tri chloride, iridium tetra chloride and/or  $\text{H}_2\text{PtCl}_6$  (chloroplatinic acid) (Spec. 7, l. 22 to 9, l. 9 and 12, ll. 15-23, 14, ll. 10-19, Examples 1-8).

4. Appellants state that the group VIII metal may be provided in the form of a metal salt that is dried and calcined (Br. 5).

5. Appellants further assert that this process "will result in changing the form of the metal into an oxide or some other metal compound" (Reply Br. 2).

#### C. PRINCIPLES OF LAW

During examination, "claims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (*quoting In re Bond*, 910 F.2d 831, 833 (Fed. Cir. 1990)). However, limitations from the specification are not to be read into the claims. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) ("[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.").

"[T]he term 'comprises' permits the inclusion of other steps, elements, or materials." *In re Baxter*, 656 F.2d 679, 686 (CCPA 1981); *Vehicular Techs. Corp. v. Titan Wheel Int'l, Inc.*, 212 F.3d 1377, 1383 (Fed.

Cir. 2000) (“A drafter uses the term ‘comprising’ to mean ‘I claim at least what follows and potentially more.’”).

The way a term is used in a claim can provide guidance as to claim terms meaning. *Phillips*, 415 F.3d at 1314 (“[T]he context in which a term is used in the asserted claim can be highly instructive”).

#### D. ANALYSIS

Appellants argue that the claimed catalyst differs from the catalyst taught by Frame in that (a) Frame teaches the necessary presence of Group VIIB metals which are not recited in the claimed catalyst and (b) Frame teaches that the metal necessarily is in the form of a phthalocyanine (Br. 4-5; Reply Br. 2). Neither of these positions is persuasive.

We find it of no moment that the Frame catalyst includes Group VIIB phthalocyanine as well as Group VIII phthalocyanines. We agree with the Examiner that claim 1 uses open “comprising” language that does not exclude the presence of additional components, including the presence of Group VIIB phthalocyanines, as part of the catalyst system. Appellants’ Specification supports interpreting the claim to allow the inclusion of other compounds (FF 1). This interpretation of claim 1 is further supported by the claim language requiring the group VIII noble metal only be present in the catalyst in a concentration of 0.02% to 10% by weight based on the total weight of the catalyst (*see* claim 1). As such, the remaining 90 to 98.8% of the catalyst must comprise one or more additional components, and the claim is silent as to what those additional components may be. Incidentally, because the claims use open “comprising” language, we also find it of no moment that Frame teaches treating a feedstock to a pH of 8-14, which

Appellants assert to be another distinction between the claimed invention and the process taught by Frame (*see* Br. 5).

We also agree with the Examiner that the inclusion of the Group VIII metal in the form of a Group VIII metal phthalocyanine does not render the material outside of the scope of the claimed “group VIII noble metal.” Claim 1 does not require the Group VIII metal to be in a pure form nor does it require that a support be impregnated with a group VIII metal in the form of a salt or the subsequent steps of drying and calcining (*see* claim 1), and we decline to read into the claims any such requirements. Rather, Appellants’ Specification suggests that the group VIII metal may be provided in a form other than a pure metal (FF 2-3). Further, Appellants assert that the group VIII noble metal may be present in the form of “some other metal compound” (FF 4-5). Accordingly, Appellants have not shown any distinction between a group VIII phthalocyanine and any “other metal compound” that includes a group VIII noble metal in order to render the group VIII phthalocyanine outside of the scope of the claim.

Accordingly, Appellants have not shown that the Examiner reversibly erred in interpreting the claimed catalyst to encompass the catalyst taught by Frame.

### III. *The catalyst carrier*

#### A. ISSUE ON APPEAL

Appellants contend that Frame “says nothing about the use of stabilized or partially stabilized zirconia as a carrier” and that “stabilized zirconia is something different than the solid zirconia mentioned in the Frame patent” (Br. 5; Reply Br. 2). The Examiner contends that it would

have been obvious for the zirconia support disclosed by Frame to include stabilized or partially stabilized zirconia (Ans. 6).

Thus, a second issue on appeal arising from the contentions of Appellants and the Examiner is: have Appellants shown that the Examiner reversibly erred in finding that one of ordinary skill in the art would have considered Frame's disclosure of a "zirconia support" to include stabilized or partially stabilized zirconia?

**B. FACTUAL FINDINGS**

The following additional Findings of Fact are relevant to deciding the above identified issue on appeal:

6. Frame teaches that the catalyst system may be dispersed on or impregnated in a solid zirconia support (Frame, col. 4, ll. 61-65).

7. Appellants' Specification describes "a zirconia paint" as a commercially available "zirconium oxide partially-stabilized with 4%wt CaO; type ZO; ex. ZYP Coatings Inc., Oak Ridge, USA" (Spec. 7, ll. 24-26).

**C. PRINCIPLES OF LAW**

A claimed invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the pertinent art. 35 U.S.C. § 103(a) (2000); *Graham v. John Deere Co.*, 383 U.S. 1, 13-14 (1966).

"On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of prima facie obviousness or by rebutting the prima facie case with evidence of secondary indicia of nonobviousness." *In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) (emphasis omitted).



In considering the question of the obviousness of the claimed invention in view of the prior art relied upon, we are guided by the basic principle that the question under 35 U.S.C. § 103 is not merely what the references expressly teach but what they would have suggested to one of ordinary skill in the art at the time the invention was made. *See Merck & Co., v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). That is, the question of obviousness cannot be approached on the basis than an artisan having ordinary skill would have known only what they read in the references, because such artisan is presumed to know something about the art apart from what the references disclose. *See In re Jacoby*, 309 F.2d 513, 516 (CCPA 1962); *In re Preda*, 401 F.2d 825, 826 (CCPA 1968) (“[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.”).

#### D. ANALYSIS

Appellants’ assertion that stabilized zirconia is “different” than the solid zirconia support taught by Frame (FF 6) is unconvincing because it lacks a clear showing or explanation as to why one of ordinary skill in the art reading “zirconia” would not have considered the use of any type of zirconia that is commercially available. Further, we find that Appellants’ Specification, describing a known (and commercially available) stabilized zirconia oxide paint as a “zirconia paint” (FF 7), is evidence that one of ordinary skill in the art would have considered a disclosure of “zirconia” to include unstabilized zirconia, partially stabilized zirconia or fully-stabilized zirconia in any commercially available form. Appellants have provided no

reasoning to suggest otherwise. Accordingly, Appellants have not shown that the Examiner reversibly erred in finding that one of ordinary skill in the art would have considered Frame's disclosure of a "zirconia support" to include stabilized or partially stabilized zirconia.

*IV. Noble metal present from 0.02 to 10% by weight*

A. ISSUE ON APPEAL

In the rejection, the Examiner determines that differences in concentration will not support patentability unless there is evidence indicating that such a concentration is critical, and thus the claimed concentration would have been obvious to one having ordinary skill in the art (Ans. 4-5). Appellants contend that Frame has no clear teaching as to how much of the phthalocyanine metal compounds are on a carrier, but, rather, expresses the amounts of the two phthalocyanine metal compounds in terms of relative amounts to each other (Br. 5).

Thus, a third issue on appeal arising from the contentions of Appellants and the Examiner is: have Appellants shown that the Examiner reversibly erred in determining that it would have been obvious for one of ordinary skill in the art to have provided the group VIII noble metal in an amount between 0.02 and 10% by weight?

B. FACTUAL FINDINGS

The following additional Findings of Fact are relevant to deciding the above identified issue on appeal:

8. Frame discloses group VIII noble metal phthalocyanines, including iridium, rhodium or platinum phthalocyanines, but does not disclose the concentration of the group VIII noble metal based on the total weight of the catalyst (Frame, col. 4, ll. 6-12).

9. The Examiner finds “[t]he limitation by weight % of the amount of platinum, etc. is simply a change in concentration and thus will not support patentability” (Ans. 4).

#### C. PRINCIPLES OF LAW

In addition to the Principles of Law presented above, the following Principles of Law are also relevant to the present issue.

An improvement in the art is obvious if “it is likely the product not of innovation but of ordinary skill and common sense.” *KSR Int’l v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” *In re Aller*, 220 F.2d 454, 456 (CCPA 1955).

#### D. ANALYSIS

Applying the preceding legal principles to the Factual Findings in the record of this appeal, we determine that the Examiner has established a prima facie case of obviousness. The Examiner reasons that the concentration of group VIII noble metal in the catalyst would have been obvious to one of ordinary skill in the art, even if the concentration is not explicitly disclosed by Frame (FF 8-9). We find the Examiner’s reasoning persuasive since one of ordinary skill in the art would have been capable of determining workable amounts of group VIII noble metals present in the catalyst system by routine experimentation. Further, by merely pointing out that Frame does not teach the desired concentrations, Appellants fail to adequately address the Examiner’s reasoning or explain why the Examiner’s reasoning is deficient. Thus, Appellants’ arguments fall well short of

rebutting the Examiner's prima facie case of obviousness - a position that Appellants have provided us no grounds to find unreasonable.

Accordingly, Appellants have not shown that the Examiner reversibly erred in determining that it would have been obvious for one of ordinary skill in the art to have provided the group VIII noble metal in an amount between 0.02 and 10% by weight.

Appellants further contend that the processes and catalysts of Yoo and Mahadev are substantially different from those of Frame such that the references are not properly combinable. Appellants also contend that there is no teaching within the references to suggest their combination. (Br. 6.)

The Examiner found that Frame, Mahadev, and Yoo are all directed to the removal of sulfur-containing compounds from hydrocarbon sources (Ans. 5-7; Frame, col. 1, ll. 4-13 and 39-44, Mahadev 1, ll. 4-13, Yoo, col. 1, ll. 64-66).

Appellants have not provided any facts to support the conclusory statement that the processes and catalysts would not be combinable to one of ordinary skill in the art or any further reasoning to explain this conclusion. Accordingly, Appellants have not shown that the Examiner reversibly erred in combining the teachings of Yoo and Mahadev with the teachings of Frame.

## VI. CONCLUSION

For the reasons discussed above, we sustain the Examiner's rejection of claims 1, 2, 9, 11-21, 24-26, 30, and 33-34 under 35 U.S.C. § 103(a) over Frame in view of Yoo and Mahadev.

## VII. DECISION

We affirm the Examiner's decision.

VIII. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(v) (2008).

AFFIRMED

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